JbigDeaL JbigDeaL JbigDeaL JbigDeaL
Download from www.JbigDeaL.in Powered By © JbigDeaL™

GGSIPU mathmatics 2008

1. Let $\vec{a}$ and $\vec{b}$ be two equal vectors inclined at an angle θ, then a sin $\frac{\theta}{2}$ is equal to

 (a) $\frac{|\vec{a}-\vec{b}|}{2}$ (b) $\frac{|\vec{a}-\vec{b}|}{|2|}$

 (c) $|\vec{a}-\vec{b}|$ (d) $|\vec{a}+\vec{b}|$

2. $\int \frac{dx}{x^2+4x+13}$ is equal to

 (a) log $(x^2+4x+13)$ + c

 (b) $\frac{1}{3}\tan^{-1}\left(\frac{x+2}{3}\right)$ + c

 (c) log(2x+4) + c

 (d) $\frac{2x+4}{((x^2+4x+13))^2}$ + c

3. The general solution $y^2\,dx + (x^2-xy+y^2)\,dy = 0$ is

 (a) $\tan^{-1}(\frac{x}{y})$ + log y + c = 0

 (b) $2\tan^{-1}(\frac{x}{y})$ + log x + c = 0

 (c) log ($y+\sqrt{x^2+y^2}$) + log y + c = 0

 (d) $\sinh^{-1}\left(\frac{x}{y}\right)$+log y + c = 0

4. $\int_0^{\pi/4}(\cos x-\sin x)dx + \int_{\pi/4}^{5\pi/4}(\sin x-\cos x)dx + \int_{2\pi}^{\pi/4}(\cos x-\sin x)dx$ is equal rto

 (a) $\sqrt{2}$ - 2 (b) $2\sqrt{2}$ - 2

 (c) $3\sqrt{2}$ - 2 (d) $4\sqrt{2}$ - 2

5. Out of 40 consecutive natural numbers ,two are chosen at random.Probability that the sum of the number is odd,is

 (a) $\frac{14}{29}$ (b) $\frac{20}{39}$

 (c) $\frac{1}{2}$ (d) None of these

6. Equation of tengents to the ellipse $\frac{x^2}{9}+\frac{y^2}{4}$ = 1,which are perpendicular to the line 3x+4y = 7,are

JbigDeaL JbigDeaL JbigDeaL JbigDeaL Download from www.JbigDeaL.in Powered By © JbigDeaL JbigDeaL JbigDeaL JbigDeaL JbigDeaL

JbigDeaL JbigDeaL JbigDeaL JbigDeaL
Download from www.JbigDeaL.in Powered By © JbigDeaL™

(a) 4x-3y = $\pm\sqrt{20}$ (b) 4x-3y = $\pm\sqrt{12}$

(c) 4x-3y = $\pm\sqrt{7}$ (d) 4x-3y = $\pm$ 1

7. If $\vec{a}$ is perpendicular to $\vec{b}$ and $\vec{c}$, $|\vec{a}| = 2$, $|\vec{b}| = 3$, $|\vec{c}| = 4$ and the angle between $\vec{b}$ and $\vec{c}$ is $\frac{2\pi}{3}$, then $[\vec{a}\,\vec{b}\,\vec{c}]$ is equal to

(a) $4\sqrt{3}$ (b) $6\sqrt{3}$

(c) $12\sqrt{3}$ (d) $18\sqrt{3}$

8. The solution of the equation $\frac{d^2y}{dx^2} = e^{-2x}$ is

(a) $y = \frac{1}{4}e^{-2x} + \frac{cx}{2} + d$

(b) $y = \frac{1}{4}e^{-2x} + cx + d$

(c) $y = \frac{1}{4}e^{-2x} + cx^2 + d$

(d) $y = \frac{1}{4}e^{-2x} + cx^3 + d$

9. The value of $\int_2^3 \frac{x+1}{x^2(x-1)}\,dx$ is

(a) $\log\frac{16}{9} + \frac{1}{6}$ (b) $\log\frac{16}{9} - \frac{1}{6}$

(c) $2\log 2 - \frac{1}{6}$ (d) $\log\frac{4}{3} - \frac{1}{6}$

10. The length of the chord of the parabola $x^2=4y$ passing through the vertex and having slope cot ~ is

(a) 4 cos ~ cosec^2 ~ (b) 4 tan ~ sec ~

(c) 4 sin ~ $\sec^2$ ~ (d) None of these

11. The records of a hospital show that 10% of the cases of a certain disease,then the probability that only three will die, is

(a) 8748×10^{-5} (b) 1458×10^{-5}

(c) 1458×10^{-6} (d) 41×10^{-6}

12. From the point P(16,7) tangents PQ and PR are drawn to the circle $x^2+y^2-2x-4y-20 = 0$.If c be the centre of the circle,then area of quadrilateral PQCR is

(a) 450 sq unit (b) 15 sq unit

JbigDeaL JbigDeaL JbigDeaL JbigDeaL Download from www.JbigDeaL.in Powered By © JbigDeaL JbigDeaL JbigDeaL JbigDeaL JbigDeaL

JbigDeaL JbigDeaL JbigDeaL JbigDeaL
Download from www.JbigDeaL.in Powered By © JbigDeaL™

(c) 50 sq unit (d) 75 sq unit

13. If tan x = $\frac{b}{a}$, then the value of a cos 2x + b sin 2x is

(a) a (b) a-b

(c) a+b (d) b

14. In a triangle ABC,right angled at C,the value of cot A + cot B is

(a) $\frac{c^2}{ab}$ (b) a+b

(c) $\frac{a^2}{bc}$ (d) $\frac{b^2}{ac}$

16. If ~, are roots of the equation $lx^2 + mx + n = 0$,then the equation whose roots are $~^3$ and $~^3$,is

(a) $l^4x^2 - nl(m^2 - 2nl)x + n^4 = 0$

(b) $l^4x^2 + nl(m^2 - 2nl)x + n^4 = 0$

(c) $l^4x^2 + nl(m^2 - 2nl)x - n^4 = 0$

(d) $l^4x^2 - nl(m^2 - 2nl)x + n^4 = 0$

17. The value of $2^{1/4} . 4^{1/8} . 8^{1/16} . 16^{1/32}$...

(a) 3/2 (b) 5/2

(c) 2 (d) 1

18. $\begin{bmatrix}1\\-1\\2\end{bmatrix}$ [2 1 -1] is equal to

(a) $\begin{bmatrix}2\\-1\\-2\end{bmatrix}$ (b) $\begin{bmatrix}2 & -1 & -1\\-2 & -1 & 1\\4 & 2 & -2\end{bmatrix}$

(c) [-1] (d) not defined

19. $\lim_{x\to\infty}\frac{(2x-3)(3x-4)}{(4x-5)(5x-6)}$ is equal to

(a) $\frac{1}{10}$ (b) 0

(c) $\frac{1}{5}$ (d) $\frac{3}{10}$

20. Function f(x) = $\begin{cases} x-1, & x<2 \\ 2x-3, & x\geq 2 \end{cases}$ is a continuous function

JbigDeaL JbigDeaL JbigDeaL JbigDeaL Download from www.JbigDeaL.in Powered By © JbigDeaL JbigDeaL JbigDeaL JbigDeaL JbigDeaL

JbigDeaL JbigDeaL JbigDeaL JbigDeaL
Download from www.JbigDeaL.in Powered By © JbigDeaL™

(a) for x = 2 only

(b) for all real values of x such that x÷2

(c) for all real values of x

(d) for all integral values of x only

21. Differential coefficient of $\sqrt{\sec\sqrt{x}}$ is

(a) $\frac{1}{4\sqrt{x}}\sec\sqrt{x}\sin\sqrt{x}$

(b) $\frac{1}{4\sqrt{x}}(\sec\sqrt{x})^{3/2}.\sin\sqrt{x}$

(c) $\frac{1}{2}\sqrt{x}\sec\sqrt{x}\sin\sqrt{x}$

(d) $\frac{1}{2}\sqrt{x}(\sec\sqrt{x})^{3/2}.\sin\sqrt{x}$

22. The function x^5-5x^4+5x-1 is

(a) neither maximum nor minimum at x = 0

(b) maximum at x=0

(c) maximum at x=1 and minimum at x=3

(d) minimum at x=0

23. If $x= y\sqrt{1-y^2}$,then $\frac{dy}{dx}$ is equal to

(a) x (b) $\frac{\sqrt{1-y^2}}{1+2y^2}$

(c) $\frac{\sqrt{1-y^2}}{1-2y^2}$ (d) 0

24. If the planes x+2y+kz = 0 and 2x+y-2z = 0,are at the right angles,then the value of k is

(a) 2 (b) -2

(c) $\frac{1}{2}$ (d) $-\frac{1}{2}$

25. The ratio in which the line joining (2,4,5), (3,5,-4) is divided by the yz plane is

(a) 2:3 (b) 3:2

(c) - 2:3 (d) 4:-3

JbigDeaL JbigDeaL JbigDeaL JbigDeaL Download from www.JbigDeaL.in Powered By © JbigDeaL JbigDeaL JbigDeaL JbigDeaL JbigDeaL

JbigDeaL JbigDeaL JbigDeaL JbigDeaL
Download from www.JbigDeaL.in Powered By © JbigDeaL™

26. If the lines 3x+4y+1 = 0,5x+^{a}y+3 = 0 and 2x+y-1=0 are concurrent, then ^{a} is equal to

(a) -8 (b) 8 (c) 4 (d) -4

27. The value of $\int_0^1 \frac{x^4+1}{x^2+1}$ dx is

(a) $\frac{1}{6}$(3-4®) (b) $\frac{1}{6}$(3®+4)

(c) $\frac{1}{6}$(3+4®) (d) $\frac{1}{6}$(3®-4)

28. The solution of the differential equation

$\frac{dy}{dx}$ = y tan x – 2 sin x,is

(a) Y sin x = c+sin 2x
(b) Y cos x = c+$\frac{1}{2}$sin 2x
(c) Y cos x = c-sin 2x
(d) Y cos x = c+$\frac{1}{2}$cos 2x

29. The value of 1- log 2 + $\frac{(\log 2)^2}{2!} - \frac{(\log 2)^3}{3!}$ + ... Is

(a) log 3 (b) log 2

(c) $\frac{1}{2}$ (d) None of these

30. The maximum value of f(x) = $\frac{x}{4+x+x^2}$ on [-1,1] is

(a) $\frac{1}{3}$ (b) $-\frac{1}{4}$

(c) $\frac{1}{5}$ (d) $\frac{1}{6}$

31. If the redius of a circle be increasing at auniform rate of 2 cm/s.The area of increasing of area of circle,at the instant when the redius is 20 cm,is

(a) 70 ® cm^2 / s (b) 70 cm^2 / s

(c) 80 ® cm^2 / s (d) 80 cm^2 / s

32. If P(A) = P(B) = x and P(A ą B)=P(A' ą B') = $\frac{1}{3}$,then x is equal to

(a) $\frac{1}{2}$ (b) $\frac{1}{3}$

(c) $\frac{1}{4}$ (d) $\frac{1}{6}$

JbigDeaL JbigDeaL JbigDeaL JbigDeaL Download from www.JbigDeaL.in Powered By © JbigDeaL JbigDeaL JbigDeaL JbigDeaL JbigDeaL

JbigDeaL JbigDeaL JbigDeaL JbigDeaL
Download from www.JbigDeaL.in Powered By © JbigDeaL™

33. The focus of the parabola y^2-x-2y+2 = 0 is

(a) $(\frac{1}{4},0)$ (b) $(1,2)$

(c) $(\frac{5}{4},1)$ (d) $(\frac{3}{4},\frac{5}{2})$

34. The equation of normal at the point (0,3) of the ellipse $9x^2+5y^2 = 45$ is

(a) x-axis (b) y-axis

(c) y+3=0 (d) y-3=0

35. The equation of the tengent parallel to y-x+5=0 drawn to $\frac{x^2}{3} - \frac{y^2}{2} = 1$ is

(a) x-y+1=0 (b) x-y+2=0

(c) x+y-1 = 0 (d) x+y-2 = 0

36. Let the functions f,g,h are defined from the set of real numbers R to R such that f(x) = x^2-1, g(x) = $\sqrt{(x^2 - 1)}$ and h(x) = $\begin{cases} 0, & if\ x < 0 \\ x, & if\ x \geq 0 \end{cases}$,

Then ho(fog) (x) is defined by

(a) X
(b) X^2
(c) 0
(d) None of these

37. The angle of elevation of the sum,If the length of the shadow of a tower is $\sqrt{3}$ times the height of the pole,is

(a) 150^0 (b) 30^0

(c) 60^0 (d) 45^0

38. If sin A = n sin B,then $\frac{n-1}{n+1}$ tan $\frac{A+B}{2}$ is equal to

(a) sin $\frac{A-B}{2}$ (b) tan $\frac{A-B}{2}$

(c) cot $\frac{A-B}{2}$ (d) None of these

39. 3 $\tan^{-1}$ a is equal to

(a) $\tan^{-1} \frac{3a+a^3}{1+3a^2}$

JbigDeaL JbigDeaL JbigDeaL JbigDeaL Download from www.JbigDeaL.in Powered By © JbigDeaL JbigDeaL JbigDeaL JbigDeaL JbigDeaL

JbigDeaL JbigDeaL JbigDeaL JbigDeaL
Download from www.JbigDeaL.in Powered By © JbigDeaL™

(b) $\tan^{-1}\frac{3a-a^3}{1+3a^2}$

(c) $\tan^{-1}\frac{3a+a^3}{1-3a^2}$

(d) $\tan^{-1}\frac{3a-a^3}{1-3a^2}$

40. In which quadrant of the complex plane ,the point $\frac{1+2i}{1-i}$ lies ?

(a) Fourth (b) First

(c) Second (d) Third

41. If sin ~ and cos ~ are the roots of the equation $px^2+qx+r = 0$,then

(a) $p^2+q^2-2pr = 0$

(b) $p^2-q^2+2pr = 0$

(c) $p^2-q^2-2pr = 0$

(d) $p^2+q^2+2pr = 0$

42. If a,b,c are in the GP,then the equations $ax^2+2bx+c = 0$ and $dx^2+2ex+f = 0$ have a common root,if $\frac{d}{a}$, $\frac{e}{b}$, $\frac{f}{c}$ are in

(a) AP (b) GP

(c) Hp (d) None of these

43. In the expension of $(2x^2 - \frac{1}{x})^{12}$, the term independent of x is

(a) 8^{th} (b) 7^{th}

(c) 9^{th} (d) 10^{th}

44. The general value of ¯ in the equation cos¯ = $\frac{1}{\sqrt{2}}$,tan¯ = -1 is

(a) 2n® ± $\frac{\pi}{6}$, n Č I

(b) 2n® + $\frac{7\pi}{6}$, n Č I

(c) n® + $(-1)^n\frac{\pi}{3}$, n Č I

(d) n® + $(-1)^n\frac{\pi}{4}$, n Č I

JbigDeaL JbigDeaL JbigDeaL JbigDeaL Download from www.JbigDeaL.in Powered By © JbigDeaL JbigDeaL JbigDeaL JbigDeaL JbigDeaL

JbigDeaL JbigDeaL JbigDeaL JbigDeaL
Download from www.JbigDeaL.in Powered By © JbigDeaL™

45. If $A = \begin{bmatrix} 1 & 2 \\ 3 & -5 \end{bmatrix}$, then A^{-1} is equal to

(a) $\begin{bmatrix} -5 & -2 \\ -3 & 1 \end{bmatrix}$

(b) $\begin{bmatrix} 5/11 & 2/11 \\ 3/11 & -1/11 \end{bmatrix}$

(c) $\begin{bmatrix} -5/11 & -2/11 \\ -3/11 & -1/11 \end{bmatrix}$

(d) $\begin{bmatrix} 5 & 2 \\ 3 & -1 \end{bmatrix}$

46. The value of $\lim_{x \to \infty} \left(\frac{x^2+bx+4}{x^2+ax+5} \right)$ is

(a) $\frac{b}{a}$ (b) o

(c) 1 (d) $\frac{4}{5}$

47. Let f(x) = $\begin{cases} \frac{\sin \pi x}{5x} & x \neq 0 \\ k, & x = 0 \end{cases}$ if f(x) is the continuous at x= o ,then k is equal to

(a) $\frac{\pi}{5}$ (b) $\frac{5}{\pi}$

(c) 1 (d) 0

48. If θ be the angle between the vectors $\vec{a} = 2\hat{i} + 2\hat{j} - \hat{k}$ and $\vec{b} = 6\hat{i} - 3\hat{j} + 2\hat{k}$, then

(a) $\cos\theta = \frac{4}{21}$

(b) $\cos\theta = \frac{3}{19}$

(c) $\cos\theta = \frac{2}{19}$

(d) $\cos\theta = \frac{5}{21}$

49. Let $\vec{a}$, $\vec{b}$ and $\vec{c}$ be vectors with magnitudes 3,4 and 5 respectively and $\vec{a}+\vec{b}+\vec{c} = \vec{0}$,then the values of $\vec{a}.\vec{b} + \vec{b}.\vec{c} + \vec{c}.\vec{a}$ is

(a) 47 (b) 25

(c) 50 (d) -25

50. The maximum value of z= 4x+2y subjected the constrains $2x+3y \leq 18, x+y \geq 10, x,y \geq 0$

JbigDeaL JbigDeaL JbigDeaL JbigDeaL Download from www.JbigDeaL.in Powered By © JbigDeaL JbigDeaL JbigDeaL JbigDeaL JbigDeaL

JbigDeaL JbigDeaL JbigDeaL JbigDeaL
Download from www.JbigDeaL.in Powered By © JbigDeaL™

(a) 20 (b) 36

(c) 40 (d) None of these

JbigDeaL JbigDeaL JbigDeaL JbigDeaL Download from www.JbigDeaL.in Powered By © JbigDeaL JbigDeaL JbigDeaL JbigDeaL JbigDeaL